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affected that no rules can be laid down for its use, though it is certainly less of a decolorizer than alcohol. Its considerable antiseptic and toxic properties are finally described. P.

Jordan and Evermann's Fishes, Part IV.¹—The last volume of this great work has just been issued. It contains the additional Addenda and the plates illustrating nearly one thousand species of American fishes. This entire work is in one sense a revision of "Synopsis of Fishes of North America" (*Bulletin No. 16*), by Jordan and Gilbert. *Bulletin No. 16*, however, included only the fishes then known to inhabit North America north of the Tropic of Cancer. Aside from the Addenda, it forms one volume of 866 pages and records 1339 species. The Addenda contain 108 more pages, which adds about 160 more species. The volume contains no plates. The present work includes all salt-water fishes which inhabit America north of the equator, and all fresh-water fishes north of the Isthmus of Panama. Aside from the Addenda, the work contains 2744 pages and describes 3127 species of fishes. The Addenda in Vol. III contain 130 pages, and Vol. IV has an additional Addenda of 160 pages. Vol. IV also includes a complete table of contents for all species listed in the four volumes. "From this systematic arrangement it is seen that the fish fauna of North and Middle America, as now understood by the present authors, embraces 3 classes, 30 orders, 225 families, 1113 genera, 325 subgenera, 3263 species, and 133 subspecies." This is by far the most extensive and most useful work ever written on American fishes. It contains descriptions of all the species known from the region which it covers and analytical keys to facilitate identification.

Attention is often called to doubtful species in footnotes, and in many cases the original description is given. This tendency not to place in synonymy doubtful species, when chances are even that a careful study will prove them valid, is to be commended. It will no doubt require a careful study of variation to dispose properly of many doubtful species and many subspecies. It is best to let them stand as first indicated until this sort of study can be made. The next century will witness a great deal of study of the variation of animals, which, with its complement of morphological study, will eventually reduce the work of the classification to a proper basis.

¹ Jordan, D. S., and Evermann, B. W. The Fishes of North and Middle America, *Bull. U. S. Nat. Mus.* (1900), Pt. iv, No. 47, ci + 3137-3313 pp., 392 plates.

The authors will invite some criticism because of their extensive use of genera and subgenera. Any characteristics which will group species must be noticed, but whether or not as much prominence should be given many of these groups by giving generic or subgeneric names will remain as a matter of opinion. If in this respect the authors have gone to one extreme, they have chosen the more scientific one. The retention of common names will prove very useful. The type of each genus is indicated, as is also the locality of the type of each species. The museum in which the type is preserved is also given.

In the mechanical construction of the book we regret that the family and generic names are not at top of the page, as in *Bulletin No. 16*; a useful feature has here certainly been omitted. The authors have done well a great work, and *Bulletin No. 47*, for many years to come, will represent the ideas of our best American ichthyologists concerning the classification of our American fishes.

S. E. MEEK.

The Monascidians of the Bremer Expedition. — The report on this group of animals is by Dr. Robert Hartmeyer (*Zool. Jahrb.*, Abth. f. System. Geog. u. Biologie, Bd. XII (1899), pp. 433-520).

In all, eleven species are treated, three of which are new. The genus *Dendrodoa*, the validity of which has been doubted by several writers, is accepted by the author and a new species added.

It is pointed out that, as between the northern and more southern range of each species, in every case the latter were taken in the greater depths of water.

The author thinks that the distribution of the species confirms the idea of circumpolar range of species. The same writer reported some time ago (*Zool. Anz.*, Bd. XXII (1899), Nr. 590, p. 268) that the two Arctic species in *Dendrodoa* of the collection retain the larvæ in a brood pouch until a late stage of life. This method of larval protection is not uncommon among compound Ascidians, but is known in only one or two other instances among the simple ones. The author points out that the tendency of Arctic marine animals to thus retain the young for protection is seen in various groups; and that, consequently, the habit in these two species of Monascidians is only in keeping with a general physiological adaptation; that, in all probability, other species will be found to possess the same peculiarity. I may add that I have recently observed the same thing in a species of *Ascidia* from Alaskan waters.

W. E. RITTER.